

7. 5. 48 (1)
MESOLABIVM
ARCHITECTONICVM

THAT IS,

A most rare, and singular Instrument,
for the easie, speedy, and most certaine mea-
suring of Plaines and Solids
by the foote :

*Necessary to be knowne of all men whatsoever,
who would not in this case be notably
defrauded :*

Invented long since by Mr. Thomas
Bedwell Esquire.

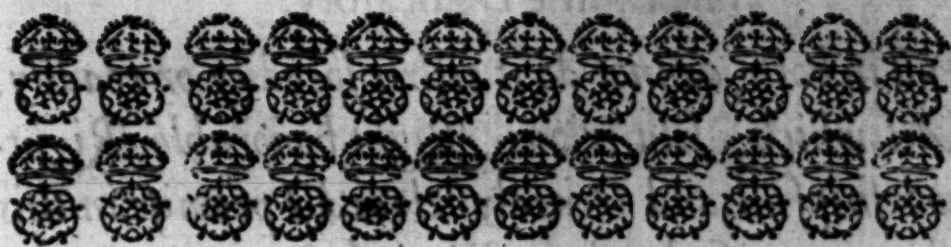
And now published, and the Use thereof decla-
red by Wilhelm Bedwell, his nephew,
Vicar of Tottenham.

LONDON,

Printed by John Norton, 1639.



Printed by John Norton, 1638.



TO THE ILLVSTRIOVS,
Right-honourable, Right-worshipfull, and
dearely beloved, the Nobility, Gentry, and
Commons of *Great Britaine,*
and *Ireland.*

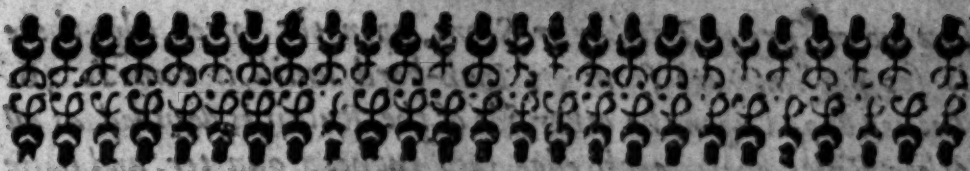
GOD, sayth the wise-man, hath ordered
all things by measure, number, and
weight. And man, the image of God,
ought, as the Phylosophers teach, to order
all his life according to the same directions.
And yet who knoweth not, how little they are of all
men regarded! To passe by the generall, and to
come to that which concerneth our commerce,
What smatterer in the Mathematicks is he, who
knoweth not, what neglect or ignorance there is,
even in those artists, whom all men, the Rich as well
as the Poore, do, and must daily trust, in matters
of measuring! I accuse no man of wilfull fraude or
malice. But this I say, There is no man whatsoever,
that is not some peece of a scholler, that can mea-
sure tymbre truely: and those who are most skil-

The Epistle Dedicatory.

full in both, cannot do it either speedily, or readily.
All which, Illustrious, Right honorable, Right-
worshipfull, and Dearely beloved, I promise in this
short treatise, by the ordinary Instrument, in this
case used, to teach the meanest of understanding,
though wholly unlearned, to do, with that speede,
facillity, and certaintie, that may not be bettered.
This as a Prodromus, begun and ended, in the
middest of many and great troubles, I thought
good to premise and send out, before a larger dis-
course of the Fabrick, and more ample Use ther-
of, which, God willing, shall follow, so soone as
Figures and Diagrammes may conueniently be
cut, for that purpose, with all possible speed: In-
the meane time the Authour, wholly devoted to his
Countries service, reſteth

Your H.H.H. in all obſervancy,

Wilhelm Bedwell.



TO THE READER.

GEntle Reader, there hath been many Rules made, and invented for the measuring of Tymber-bord, Glasse, and Stone, the which there is no Ruler so much cald for of workemen as that, that was set forth by learned Mr. Dikes, since that time there was a Ruler set forth by Mr. Bedwell, the which for all kinde of unsquare Tymber is the best that ever was set forth. Now if all men that had any occasion to use a 2. foote Rule would be advised by me to have these 2. Rules in on as I have now contrived it, and then I dare boldly say, that it would resolve all questions for the measuring of Tymber, or Stone, that is, square or unsquare, is for the Ruler of slope or diagon-line, the true ground of it from the Mathematickes, it is a true Tangent-line for the making of it by Arithmetick is best knowne to the workeman that will be very carefull to make them exactly, because it is so usefull for all workemen, or any other, that hath any accation to buy or sell, Tymber-bord, Glasse, Stone, Allyblaster, or the like: it is broder then other Rules be, but I can make it of what breadth any man will have it, if he will have it no broader, then the ordynary Rulers, that every workeman doth cary in his hand, upon on side of this Ruler there is divided into 24. Inches, and upon the lower, or nearer side, as I call it of that slate every Inche is divided into 8. parts, and numbred from one to 24. upon the uper side of that flat it is divided into unequall parts, and numbred from 3 to 24. upon the uper edge of the Rule. There is set on the measure from one Inch square, untill it come to 36. for all
A 3 squares

To the Reader,

Square measure of Tymber or Stone, upon the lower edge there is set bord measure from, 1 Inch-bord untill it come to 36. Inches Broad, upon the other side of the Rule it is devided as all other Rules are, each edge into Inches, quarter, and halfe quarters, and in the middle there is a space left, that a man may set on, some other worke, what he hath a minde to as severall Scales for the drawing of the ground plat for buildings, or for the casting up the content of land. First for the use of all Tymber, or Stone, that is, more of one side then of the other, for example: Suppose that a peece of Tymber 4 Inches of one side, and 18 Inches one the other, then 2 Foote in length doth make a foote of square Tymber. Another example; suppose that a peece of Tymber be 5 Inches of one side, and $14\frac{1}{2}$ on the other side, then 2 foote in length doth make one foote of Tymber. Again, suppose there be a peece of Tymber or Stone, that is, 6 Inches of one side, and 12 inches on the other side, then 2 foote in length doth make a foote of Tymber, and so for these 3 examples, they are all resolved at the end of the rule with the veyne or carcer; now slyde on the veyne untill you come to the end of the line 7 Inches of one side, and 12 Inches one the other syde, then you shall finde that the veyne by the edge of it doth cut 20 Inches, and $\frac{2}{3}$ th, of an Inch, which is the true length of one foote of Tymber: then slide one the veine further, and you shall finde the next to be 8 Inches of one side, and 12 on the other, and there is 18 Inches in length to make a foote of Tymber. Again if a peece of Tymber be 9 Inches of one side, and 12 Inches one the other side, then 16 Inches in length doth make a foote of Tymber; suppose a peece of Tymber be 10 Inches on the one side, and 12 on the other, then 14 Inches, and $\frac{1}{6}$ of an Inch in length doth make a foote of Tymber. Suppose that the Tymber be 11 Inches of one side, and 12 one the other, then 13 Inches, and one $\frac{1}{3}$ part of an Inch doth make a foote of Tymber. And if a peece of Tymber be 12 Inches square one each side, then 12 Inches in length doth make a foote of Tymber. Now if the Tymber be 12 Inches one way, and 13 the other, the Rule doth plainly shew 11 Inches, and $\frac{1}{6}$ of an Inch in length doth make

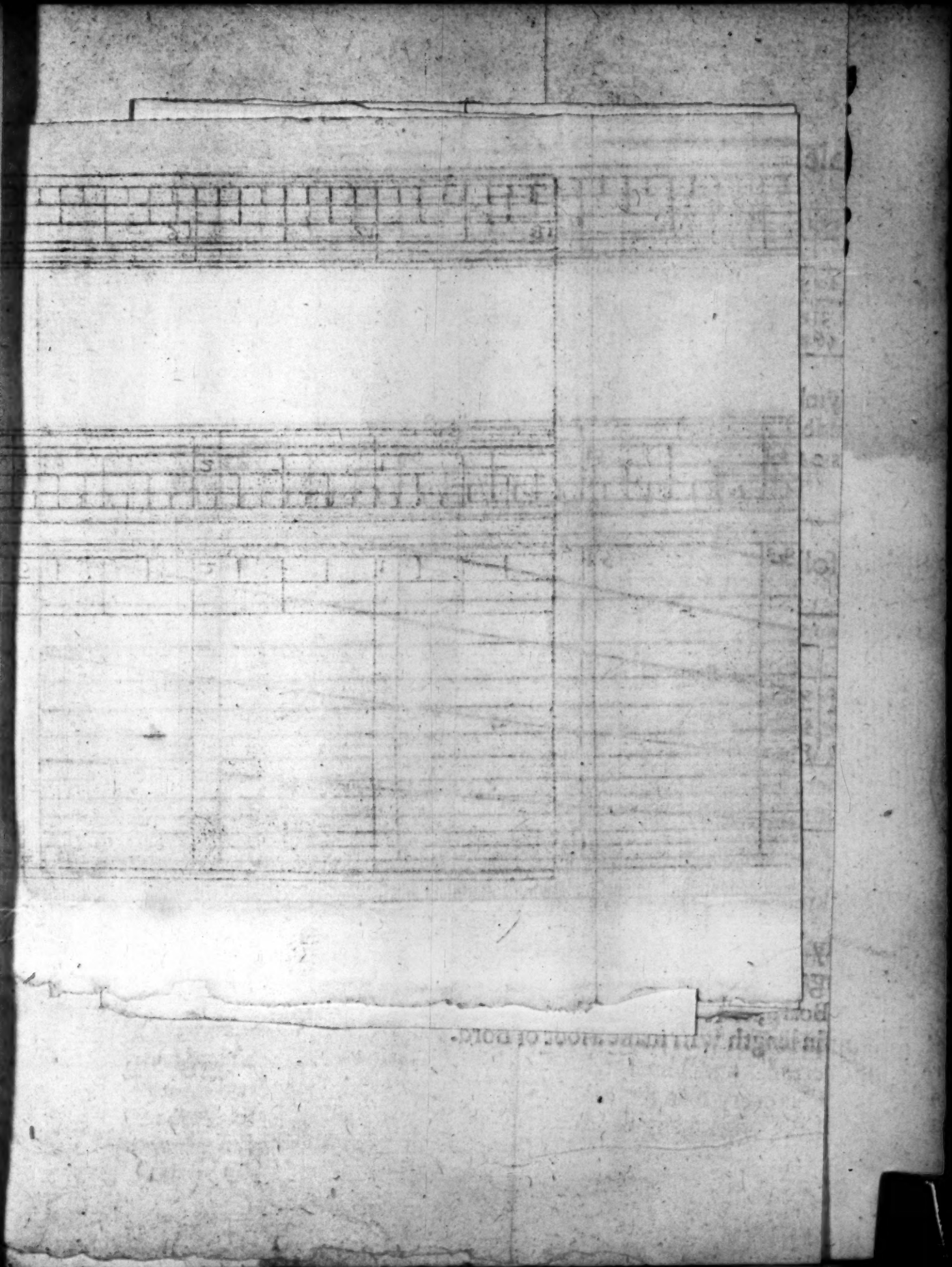
To the Reader.

make a foote of square Tymber. Again if a peece of Tymber be 12 Inches one side, and 14 one the other, then doth the Rule shew you that 10 Inches, and $\frac{1}{2}$ of a Inch doth make a foote of Tymber. Again if a peece of Tymber or Stone, be 12 Inches one side, and 15 one the other, then remove the Veine forward to the end of the line 15, and there the edge of the Veine doth shew you that 9 Inches, and $\frac{1}{2}$ of an Inch in length doth make a foote of Tymber. The next is 12 Inches one side, and 16 one the other side, then doth the Veine cut 9 Inches just, which is the true length of a foote of Tymber. Again if a peece of Tymber be 12 on the one side, and 17 one the other, then doth the Veine shew you that 8 Inches, and $\frac{2}{3}$ doth make a foote of Tymber. The next is 12 Inches, and 18 then doth the Veine shew you that 8 Inches in length doth make a foote of square Tymber. Again if the Tymber be 12 one way, and 19 the other, then 7 Inches, and $\frac{1}{2}$ of an Inch doth make a foote of Tymber. Again the Tymber be 12 one side, and 20 one the other side, then 7, & $\frac{3}{4}$ of the Inch doth make a foote of Tymber, suppose that a peece of Tymber be 12 one way, & 21 the other, then 6 Inches and $\frac{1}{2}$ of a Inch doth make a foote of Tymber if the Tymber be one side 12, & 22 one the other. Then 6 Inches, and $\frac{2}{3}$ of a Inch doth make a foote of Tymber. Say it is 12 one side, and 23 one the other then 6 Inches, and $\frac{1}{4}$ in length doth make a foote of Tymber. If the Tymber be 12 on one side, and 24 one the other, then 5 Inches in length doth make a foote of Tymber. Now I have heere ended with the line of 12, and doe begin with the line of 24. Suppose a peece of Tymber be 12 Inches, and $\frac{1}{2}$ one the on side, one the other 24, then 5 Inches, and $\frac{1}{4}$ in length doth make a foote of Tymber. If the Tymber be 13 Inches, on the one side, and 24 one the other, then 5 Inches, and $\frac{1}{2}$ doth make a foote of Tymber. If the Tymber be 14 Inches on one side, and 24 one the other, then 5 Inches, and $\frac{1}{3}$ part doth make a foote of Tymber. Again if it be 15 Inches one side, and 24 one the other, then 4 Inches, and $\frac{3}{4}$ in length doth make a
foote

To the Reader.

foote of Tymber, suppose the Tymber bee 16 Inches one way, and 24 the other, then 4 Inches, and $\frac{1}{2}$ doth make a foote of Tymber. If the Tymber be 17 Inches one way, and 24 one the other, then 4 Inches, and $\frac{1}{2}$ part of an Inch doth make a foote of Tymber. Againe, if the Tymber bee 18 Inches one side, and 24 one the other, then 4 Inches in length doth make a foote of square Tymber, and so forward to 24, where in the foote their is 1728 square Inches, and so there is in every foote of square cubycall Tymber, or Stone. I have set downe questions sufficient for any meane capacity, for I writ to no other end: but that the vulgar sort of Mechanickes should understand how to buy a peece of Tymber, and how to sell it, for I know those that are schollers, I may well show them some things. but I dare not undertake to teach them, for a word to the wise will serve, when many words, and demonstrations will not serue the others.

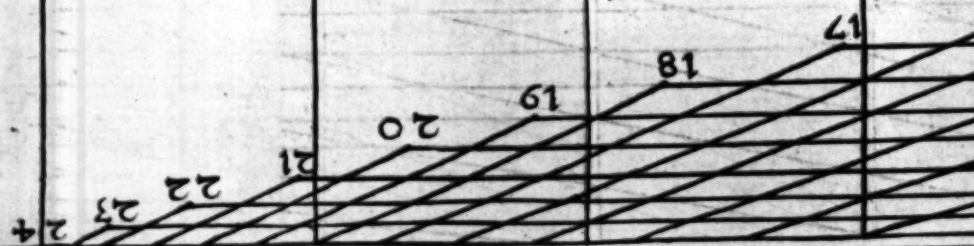
Heere followeth an easie Table for the measuring
of Tymber, or Stone, that is
Square.



18	17	16	15	14	13	12
----	----	----	----	----	----	----

6	5	4	3	2	1
---	---	---	---	---	---

6	5	4	3	2	1
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of the...
for... propose the Tyme

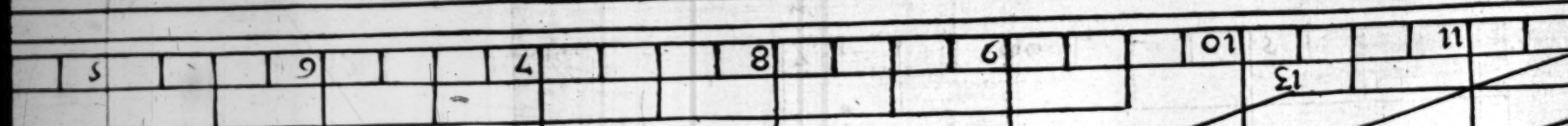
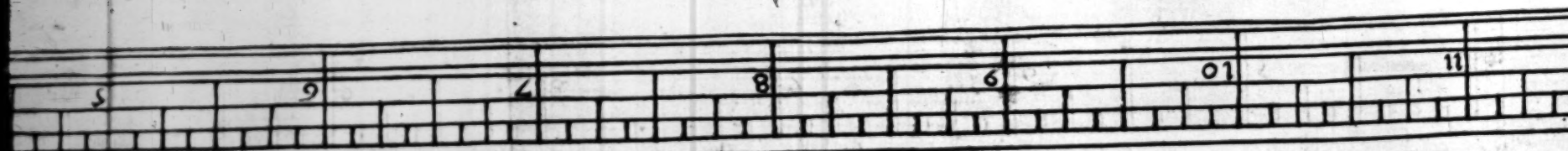
11	10	9	8	7
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7	8	9	10	11	12	13
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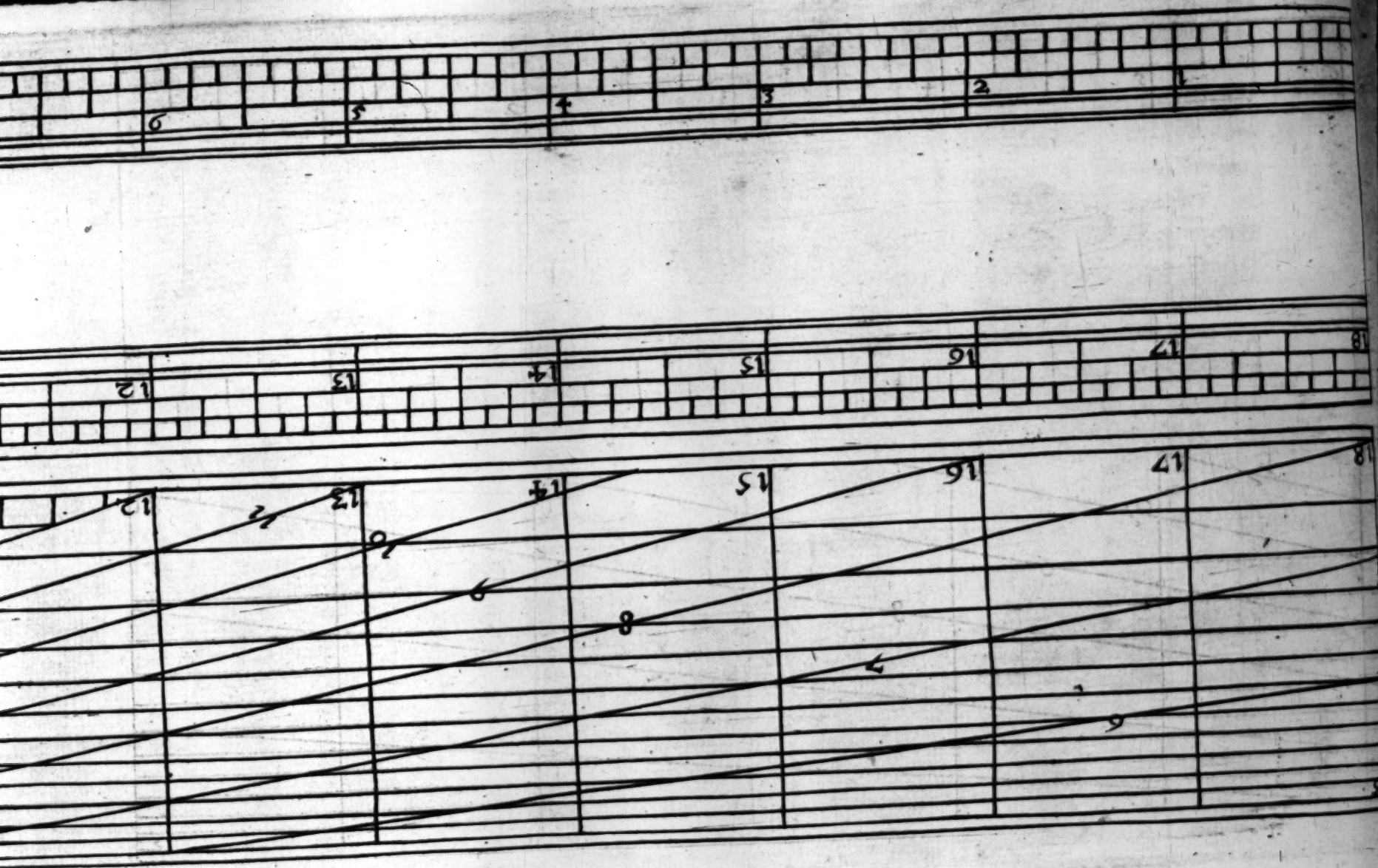
7	8	9	10	11	12	13
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16	15	14	13	12	11	10	9	8	7
----	----	----	----	----	----	----	---	---	---

...
...
...



foote of Tymber, suppose the Tymber bee 16 Inches one



The Table for Tymber measure.

Inch.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
Foot	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
Inches	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
Parts	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36

Suppose the square of your Tymber were 9 Inches, then seeke on the Rule the Number 9, and there you shall finde the jnst length of a foot of Tymber the which in length by Inches is 21, and $\frac{1}{3}$ of an Inch, and so much for Tymber, or Stone that is square.

Now followeth the Table for Bord.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36

Example.

If you would measure any Bord, or Glasfe, that weare 6 Inches broad, then 2 foot in length doth make one foot of Board. Again, suppose your Board, or Glasfe were 9 Inches broad, 16 Inches in length will make a foot of Bord.

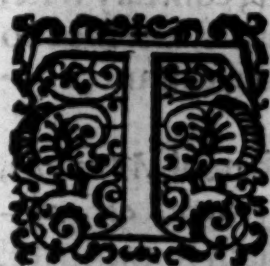


MESOLABIUM ARCH- TECTONICVM.

CHAP. I.

*Of the Mesolabe : And of the use of it
in generall.*

1. To measure by this Rule, is by two knowne lines, to finde out the third unknowne.



He Instrument whose use at this time we intend to declare, is no other, in respect of matter and forme, in generall, but the Carpentars rule, by them used in the measuring of Tymber, and Bound by the Foote, square: For it is a flat Ruler, or oblong parallelogram, of two foote, or a foote & halfe long: Two inches and an halfe, or there abouts broad: And of such convenient thicknesse as shall at every mans discretion be thought most fit.

Againe, as theirs, so this on the one side, containeth a Scale of equall divisions, First of Inches, Halfe-Inches, Quarters, Halfe puarters, and so forth: Then againe, on the same side, you have an Inche divided into Seaven, Eleven, Thirteene, Seaventeene, Nineteene, and Three and twenty, and such other equall parts, as every man for his owne use shall thinke most fitte, and the workmans hand shall be able to performe.

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More over, on the other side, as on theirs also, you have a Scale of unequall divisions, serving for the measuring of Bourd and Tymber: But after a farr different manner: For their divisions are only markes or small strokes, in one of the limbe of that side, determining from the Foore end of the Rular in inches, and partes of inches, the Square measure of solids or Tymber. Whereas this of ours consisteth of two sortes of straight lines, the one Bevelling or Slanting, drawn askue from side to side: The other Parallell, that is, equidistant one frō another running along the Rular, from the one end toward the other: And therefore cutting those former, and dividing them into unequall portions, whereby not only their sayd Quadrate or square measure is performed: But also all others whatsoever, and that with great facility, speede, and certainty.

Lastly here, as also there, you must make a distinction between end, and end; For that end we call the Fore-end of the Rular, from whence the divisions of it into inches, on both sides are begun to be reckoned: And that the Backer-end where they doe end and determine: Or, contrarywise, the Fore-end is that from whence the numbers ascribed to the Bevelling lynes are lesse and lesse. But the distances between them are greater and greater.

Thus much of the Ruler, and the Partes thereof. *Mensura, innuit Aristoteles, in qualibet mensurabili genere, est quippiam minimum*: A measure, as Aristotle seemeth to intimate, is some small portion in every thing that is to be measured: And it is commonly termed of the Geometricians *Famosa mensura*: Acknowne, or set measure generally agreed upon amongst all men: As in measuring by hand-breadths, fecte, and passes, one hand breadth, on foote, one passe. And indeed it is an old saying of *Protagoras*, as Aristotle recordeth, *That man is the measure of all things*. And true it is, That *Vitruvius*, and *Hero* the mechanick or ingineer, do shew, That generally all measures are taken from the partes of Mans body, as a Finger, an Inch (*Pollex*) an Hand, or Hands breadth

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breadth, a Spanne, a Foote, a Cubit, a Paffe, an Elne, a Fathom.

But who knoweth not, What great difference there is between man & man? And not only between men of diverse Countreys and climats: But ev'n between those of one and the same prouince; Nay of one and the same family, children of the same parents? And the limmes of men being proportionall to their bodys, what difference must there needs be, between the measures taken from them? And indeed heerupon it came to passe, That the Measures, not only of diverse Nations: But ev'n of one and the same, are, and alwayes have been much different, as doth manifestly appeare by the diligent comparisous made of them by diverse and sundry learned men, and especially by that hopfull Willebrordus Snellius, as we shall, Godwilling, shortly teach in Ramus's Geometry, which we purpose to set out in English, for the benefite of such of our Country men, as delight in these study's, yet are ignorant of those languages wherein they are written.

This difference was in this our kingdome complained of in all ages; For from hence arose many greivous quarrells and suites in the Law, which our worthy Kings, and state in their Parlements, in all ages have laboured to appease, by reducing all to an uniformity: For thus we finde in our Statutes: *It is ordeined, That 3 grains of Barley, dry and round, do make an Inch: Twelve Inches do make a Foote: Three Foote do make a Yard: Five Yards and halfe do make a Perch. And 40 perches in length, and 4 in Breadth do make an Aker.* 33 of Edward the first, *De terris mensurandis* Item, *De Compositione ulnarum & Perticarum.* Againe in a Parlament held in the 25th of Queene Elizabeth, you have an Act, thus intituled: *An Act for the restraint of New-buildings, &c. in, & neere the Cities of London & Westminster* Be it enacted by the authority asor^d said, *That a Mile shall be taken & reckoned in this manner, & no otherwise: That is to say, a Mile to containe 8 Furlongs. And every Furlond to containe 40 lugges or paales: And every Lugge or Paale, to containe 26 foot and an halfe.*

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Although this same our Rule may be fitted for sundry other sorts of measures : Yet we have here nothing to do, But with the Foote, and his partes, which are Inches, Halfe-inches, Quarters, Halfe-quarters, and such other sensible partes of the same.

2 Things to be measured by this Rule, are magnitudes.

3 A magnitude is a continuall quantity.

A magnitude, or a bignesse is that which hath one, or more dimensions : Now dimensions are in number three, to wheet Length, Breadth. and Thicknesse.

4 A magnitude is of one dimension, or many-

5 The measure is of the same nature with the thing to be measured.

6 A magnitude of one dimension is called a Line.

A line, is a magnitude of length only. Or, A line is a magnitude only long. Such are wayes, or distances between place and place. Such a magnitude, sayth Proclus out of Apollonius, is conceived in the measuring of journeys. And by the difference of a lightsome place, from a darksome. Such are Lengths, Heighths, Depths, and Breadths.

7 The measure used is a Line.

Here therefore there is no further skill required in the measurer then a due application of the measure given : And therefore here in this case there is not any use of this our Instrument.

CHAP. II.

Of the measuring of Plaines by the foote square.

1 A magnitude of many dimensions, is of two or three : That is called a Surface : This a Solid.

2 If a dimension given, be eyther, greater, or lesser, then any of the numbers upon the Rular, you must take some lesser, or greater, which

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which is proportionall unto it.

3 A ſurface is a magnitude long and broad. That is, a ſurface is a magnitude which hath two dimenſions, to wit Length and Breadth. Such magnitudes, ſayth Apollonius, are the ſhadowes upon the ground, which overſpread the fields farre and wide, but do not enter into, or pierce the earth: Neither have they any thicknes at all. The Greeke word *Epiphania*, is here more ſignificant. For this word intimateth no more but, The outward appearance of any thing. For of a magnitude nothing is to be ſeen but the ſurface. Such are bourds eſteemed to be by the Carpentars: Wainſcotte, by the Joyners: Glaſſe, by the Glaſſers: Cloth, both Linnen and Woollen, by the Drapers: Land, Medow, & Wood, by the Surueighers: For in the meaſuring of theſe, there is only Breadth & Length conſidered, with out any reſpect at all had to the Thickneſſe. Therefore

2 Here the meaſure is a Surface.

Surfaces, according to their diuerſe natures, are meaſured with diuerſe and ſundry kindes of meaſures: Wood, Land, & Medow, are meaſured by the Rod or Perch: Cloth, Painting, Paving, & Wainſcotte, by the Yard: Bourd and Stone, by the Foote. Although this our Inſtrument may be fitted to all theſe, or any other like meaſure, Yet we at this time intend to meddle with no other but the laſt, to wit with the Footesquare.

4 A ſurface is eyther Plaine or Unev'n.

5 A Plaine ſurface is a ſurface, which lyeth equally between his bounds.

A ſurface, the learned know is geometrically made of Lines: Therefore as lines are eyther ſtraight or Crooked: So from hence are all ſurfaces Straight or Crooked: Or, to ſpeak more properly, Ev'n or unev'n, Plaine or Rugged: Yea & by a ſtraight line are ſurfaces tried, whether they be Ev'n, or unev'n. For if a right line applyed to a ſurface every way, do touch it in all places, it is Ev'n: Otherwiſe, it is unev'n.

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9 Plaines, as we sayd, are measured by the Foote square, That is the quadrate of 12 Inches.

A foote of plaine or flatte measure is the quadrate of 12 inches, or that which is equall unto it. That is, it containeth 144 square Inches: For 12 times 12, are 144. Having therefore a plaine given of 12 Inches broad, there is no question but 12 Inches of that breadth shall make a Foote. But if the breadth given be greater or lesse then 12. there is a question. What length, with the breadth given, shall make a plaine equall to the square 144. Here

7 Of the two lines given, the one is the breadth assigned, the other is alwayes the beveling line 12.

Here againe it must be removed, *That onely those plaines are to bee measured which are Rightangled parallelogramms*, Or to speake in their own Language, which are comprehended of a, Base, and Heigh which are rationall between themselves: Ramus 9 e II II. Those plains therefore which are not such, must be reduced unto these kinde of figures.

1 An example or two shall make all plaine. A bourd of 16 Inches broad & 18 Inches long, (And soa stock of 13 bourds) is to be measured. Here I finde 16, the line answering to the Breadth, to crosse the beveller 12, at 9 Inches from the fore-end of the Rular. Therefore I say every 9 Inches of that length shall make a Foot of bourd: Or which is all one, shall be equall to 144, the square of 12 Inches. Now 9 Inches I finde to be contained in 18 foote, the Length, 24 times: Therefore I say, The bourd assigned doth containe 24 foot of bourd. Lastly, there being in the stock 13 such bourds. I say the whole stock doth contayne 312 foot of beurd.

11 A Table of 36 Inches broad, and 28 foot long, is to be measured. Here 36 is greater then any of the parallels found upon the Rular: Therefore by the 2 e of this, I take

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take 18 the halfe of it, which I finde to meete with 12, the beveling line, at 8 Inches from the fore-end of the Regular: Therefore every 8 Inches of length, of the breadth 18 shall containe a foot of board: But the breadth given is 26 Inches: That is twice 18: Therefore every 8 Inches in length, of that Table shall be 2 foote of board. Now againe I finde 8 Inches, in 28 foot 42 times: Therefore the Table containeth twice so many foot: That is 84 foote of board.

III A pane of Glasse, 7 Inches broad, is to be measured. Here 7 is lesser then any of the parallels: Therefore by the 2^e of this, I take 14, the double thereof: Which I observe to meete with 12, at 10 Inches and 2 seaventh parts of an Inch from the fore-end: Therefore every 10 Inches and 2 seaventh partes of an Inch, of 14 Inches breadth, shall be a foot of Glasse: but the breadth given is but 7 Inches: Therefore every 10 Inches, and 2 seaventh parts of an Inch shall be but halfe a foot of Glasse.

Of the measuring of Triangles, and all other Rightlined plaines.

8 A triangle is nothing else but the halfe of a quadrangle, or parallelogramme: And if it have one right angle, it is the halfe of a rightangled parallelogramme. *Therefore*

9 It is to be measured as the Rightangled parallelogramme, only conceive that the number found, shall be the double of that which is sought.

Here therefore it must be conceived. That of the two sides enclusing the Rightangle, the one is to be understood to be the Breadth, the other the Length.

I Suppose Rightangled-triangle, whose sides including the Right-angle, are 18, and 24, are to be measured. Here I take 18 for the Heighth, or Breadth of the parallelogramme

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gramme, which also I finde to meete with the bevelling line 12, precisely at 6 Inches from the fore-end of the Ruler: Againe 6, the sayd line found, I finde just 4 times in 24 the length given: Therefore I averre the Triangle given to containe the halfe of 4 foot, that is 2 foot of board.

20 If the triangle given be not right, angled, then it is by a perpendicular, let fall within the triangle, from one of the corners unto the base, to be reduced unto two right-angled triangles.

Now this is to be done, *Euclide* teacheth that the 11 & 12 propositions of his I, booke; And P. Ramus, at the 9 & 10 elements of his V. booke of Geometry. It is also to be done by the square. Or by a triangled levell, and otherwise.

II An Obtusangled triangle, whose three sides are 26 40, and 42, is to be measured. Heere by one of those above named wayes, I finde the perpendicular or plumbline, falling from the greater corner, unto the opposite line, to be 24. And 24 I finde upon the Ruler to meete with the line of 12, at 6 Inches from the fore-end of the same: Againe 6 I finde in 42 seaven times: Therefore the Triangle given doth containe halfe so many foot, That is 3 foot and an halfe of board.

11 From hence it is manifest how any Rhombus, Rhomboides, Trapezium, or irregular right-lined multangles are to be measured.

To weet, that they are to be measured by parts, or by the particular triangles, which every such figure doth contayne. Examples you may have in the XIIII booke of Ramus's Geometry, or in any others, which have written of Geometry.

*Of the measuring of any ordinate
multangle figured.*

12 Ordinate multangled plaines are measured
by

Architectonicus.

by their halfe Perimeter, and the plumblin
from the center, unto the middest of any one
side.

These sorts of plaines may be measured, as the former
were, by dividing them into their severall Triangles: But
this last is farre shorter: And therefore to be embraced
& rather to be used in practice. Here the halfe of the perime-
ter, or bout-line, answereth to the Length in a parallelo-
gramme. And the plumblin here, is in stead of the Heighth
or Breadth there.

I An ordinate Pentangle, whose sides are 24 Inches
a piece; And the Plumblin from the center, to the middest
of any one of the sides 16, is to be measured. Here 16 the
Plumblin or Heighth, doth, upon the Ruler, meet with the
slanting line 12, at 9 Inches from the oft named end:
And 9 is containd in 60, the halfe of the perimeter,
6 times and two thirds: Therefore the Pentangle given
containeth 6 foot, and two third partes of a foot of Bourd.
II A Sexangled ordinary figure, whose sides are 12 Inches
broad a piece, is to be measured. Here the Plumblin from
the center to the middest of any one side, is 10 Inches, and
8 one and twentyths of an Inch: The double of 10
(that is 20.) and 16, one & twenty partes of one Inch, ob-
serve to meete with the beveller 12, about 7 Inches, & one
quarter of an Inch, from the fore-end of the Ruler. Which
7 and a quarter, is contained in 44 sixtime, and two twenty
ninth parts. Therefore I say the Sexangled figure gi-
ven doth containe 6 foot of bourd, and some small quan-
tity more. The Circular, or forme is in like manner mea-
sured: For

I: The Circle is measured by the Ray, and
the halfe of the perimeter.

For, sayth the Geometrician; *Planus è radio & peripheria
dimidio est area circuli.* The plaine of the Ray, and halfe of the
circumference is the content of the circle. A Round table,
whose diameter is 4 foot, and 8 Inches, (or 56 Inches) is to

Mesolabium

be measured. The halfe of 59 is 28: And the halfe of the circumference is 88. Now 28 being greater then any of the parallels, I take 14 the halfe thereof: Which I find to meet with the bevelling line 12, at 10 Inches, and a quarter; from the fore-end of the Ruler: Therefore I say every 10 Inches, and a quarter of an Inch of that Table shall be 2 foot of board. And because 88 doth containe 10 and 1 quarter, 8 times, and 20 fourty ones; Therefore I say, the whole doth containe 16 foot of board, and 144 Inches.

C H A P. I I I.

Of the measuring of Bodies or Solids by the Foot.

1 A Body is a magnitude of three dimensions. A Body or Soild is a magnitude which hath Length, Breadth, and Thicknes.

2 Here the measure is also a body, to weet the Cube of 12 that is 1728.

This is our opinion: Yet if any shall thinke it a paradox, or shall gaine say it, or mainetaine the contrary, we will not contend. And

3 Of the three dimensions, two are given, the third is sought.

4 Bodies are of diverse sorts: But we will at this time meddle only with such as are comprehended of parallelogrammes, or with Cylinders.

True it is, that this our instrument may be fitted, and applyed to the measuring of many other sorts of Solid bodies: because we see no great use of it in the measuring of any other, then of these two sorts: Therefore we will declare the use of it, in the measuring of these two only. Of these the first is the Parallelepipedum, which is a plaine Soild, whose opposite sides are parallelogramme.

Architeſtonicum.

I A rightangled parallelepipedum (or a squared Tymber logge) of 12 Inches thick, 18 broad, and 16 foot long, is to be measured. Here the Thicknesse and Breadth are given: The Length is sought. These I finde upon the Rular to meet at 8 Inches from the oft named fore-end: Therefore I say, Every 8 Inches of that Logge in length shall make a solid foot of Tymber. And because I finde 8 Inches, in 16 foot, 24 times: Therefore I say, in the Tymberstick given, there is 24 foot of solid measure.

II A squared stone of 14 Inches thick, five foot (or 60 Inches) broad, and 10 foot long, is to be measured. Here 60 is greater then any of the parallels upon the Rular: Therefore I take 12 the 5th part of it: And I observe 12 & 14, to meete at 10 Inches, and 2 seauenty parts of an Inch, from the Fore-end of the Rular. Therefore I say, That every 10 Inches, and 2 seauenth parts of an Inch in length of that stone shall be 5 foot of solid measure. And because that 10 foot containeth 10 Inches, and 2 seauenth parts of an Inch, 11 times and 5 seav'nty twoos: Therefore I say the whole stone containeth 58 foot, and one third part of a Foote of solid measure.

III A rightangled Prisma, both whose sides, Parallelogramm's I meane, conteyning the rightangle are 18 Inches broad; the whole being in length 16 foot, is to be measured. Here understand that, as before was shewed, as a Triangle was but the halfe of a quadrangle: So a Prisma is nought but the halfe of a Parallelepipedum, sawne longwaies from corner to corner though the midd'le: And hence in Greek it hath the name: This known I enter with the numbers giv'n, and I finde 18 to meet with 18, at 5 Inches and one third part of an Inch from the oft named end of the Rular: Therefore I say, That every 5 Inches, and 1 third part of an Inch in length of that stick, shall be but halfe a foot of solid measure. Now because 5 Inches and 1 third of an Inch, is contained in 16 foot, 67 times and 14 sixteene parts, that is almost 68 times: therefore I say, The Prisma

Mesolabium

giv'n doth containe almost 68 halfe foot's, or 34 foot of solid measure.

IIII. A spanned solid, all whole sides are 6 Inches broad a peice, and 16 foot long, is to be measured. Here the two lines given are, as above was taught, the Plumblin from the center, unto the middest of any one of the sides: And the halfe of the compasse; That, as before was taught, is 5 Inches, and 2 eleventh parts of an Inch: This is, as you see 18. Now 5 and 2 elev'nths doth meet with 18, at 19 Inches, and 1, fifth part of an Inch from the fore-end: Therefore I say, That every 19 Inches, and one fifth part of an Inch, shall be a foot of solid measure. Lastly, because 16 Inches, and 1 fifth part is contained in 16 foot. 10 times, and 2 fifteen partes, I say that the Tymber stick giv'n doth containe 10 foot of solid measure, and some small quantity more.

Lastly a Round columnne, or Cylinder, of 44 Inches about. & 12 foot long, is to be measured. Here according to that above taught, the two lines giv'n are, The halfe diameter. & the halfe circumference: That is 22: That 7. Now these two do meet upon the Rular at 11 Inches, and 17 seaventy two parts, of an Inch, from the fore-end thereof;

Therefore the stick containeth about 13
foot of Tymber or solid
measure.

FINIS.

YOU may have these Rulers made by John Tompson,
in Hoytear-Lane, who doth make all sorts of Instru-
ments for measuring of Land.

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Est natura hominum novitatis avida. Plin.

LONDON

Printed by Tho. Cotes. 1639